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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/596,593	06/16/2006	Toshihiko Ushiro	20239/0204133-US0	8174

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EXAMINER	
SAHLE, MAHIDERE S	
ART UNIT	PAPER NUMBER
2873	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/596,593	USHIRO ET AL.	
	Examiner	Art Unit	
	MAHIDERE S. SAHLE	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☒ Other: *Detailed Action*.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :6/16/06, 11/03/06, 9/26/07 & 10/09/07.

DETAILED ACTION

Claims 1-14 are pending in this application.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

Acknowledgement is made of receipt of Information Disclosure Statement(s) (PTO-1449) filed 06/16/06, 11/03/06, 09/26/07, and 10/09/07. An initialed copy is attached to this Office Action.

Claim Objections

Claims 7 and 9 are objected to because of the following informalities: “m" and “n” are undefined. Appropriate correction is required. For the purpose of examination, “m” and “n” are assumed to be variable numbers.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims **1-5 and 10-14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Umemoto et al. (JP 06-075105) in view of Zhou et al. (USPG Pub No. 2005/0036738).

Regarding claim 1, Umemoto et al. discloses a flat microlens (see figure 1, paragraph 0024, lines 2-3) wherein: said microlens is formed using a transparent film (1) (abstract); said film (1) includes a region with graded refractive indices (abstract). Umemoto et al. discloses the claimed invention except for DLC film and when a light beam passes through said region with graded refractive indices, said light beam is focused. In the same field of endeavor, Zhou et al. discloses DLC film and when a light beam passes through said region with graded refractive indices, said light beam is focused (paragraph 0057, lines 6-8, 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film and when a light beam passes through said region with graded refractive indices, said light beam is focused of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Regarding claim 2, Umemoto et al. discloses a refraction lens region with a relatively high refractive index is formed on a first main surface of said film (paragraph 0025); and said lens region includes a convex lens formed from said first main surface and a surrounding boundary surface corresponding to part of a roughly spherical surface (paragraph 0025). Umemoto et al. discloses the claimed invention except for a DLC film. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC

film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Regarding claim 3, Umemoto et al. discloses a refraction lens region with a relatively high refractive index is formed on said first main surface to correspond with each of said microlenses (see figure 1, paragraph 0010); and said lens region has a shape of a columnar convex lens formed from said first main surface surrounded by a boundary surface corresponding to a part of a roughly cylindrical surface with a central axis parallel to said main surface (see figure 1, abstract, paragraph 0024, lines 2-3).

Regarding claim 4, Umemoto et al. discloses a refraction lens region with a relatively high refractive index is formed on said film corresponding to each of said microlenses (paragraph 0005); said lens region has a roughly cylindrical shape that passes completely through said film (see figure 1, paragraph 0024, lines 2-3); and a central axis of said cylindrical shape is perpendicular to said film (see figure 1), with higher refractive indices near said central axis (see figures 7, paragraph 0025). Umemoto et al. discloses the claimed invention except for a DLC film. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Regarding claim 5, Umemoto et al. discloses a refraction lens region with a relatively high refractive index is formed on said film corresponding to each of said

microlenses (paragraph 0005); and refractive indices are higher near a plane passing through a midpoint of a width axis of said band-shaped region and perpendicular to said film (see figures 7-9, paragraph 0025). Umemoto et al. discloses the claimed invention except for a DLC film and lens region is a band-shaped region passing completely through said DLC film. In the same field of endeavor, Zhou et al. discloses DLC film and lens region is a band-shaped region passing completely through said DLC film (see figure 8, paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Regarding claim 10, Umemoto et al. discloses wherein said microlens can act as a lens for light containing wavelengths in a range from 0.4 microns to 2.0 microns (paragraph 0017, line 6).

Regarding claim 11, Umemoto et al. discloses a flat microlens (see figure 1, paragraph 0024, lines 2-3). Umemoto et al. discloses the claimed invention except for a method wherein said DLC film is formed using plasma CVD. In the same field of endeavor, Zhou et al. discloses a method wherein said DLC film (paragraph 0057, line 17) is formed using plasma CVD (paragraph 0009, line 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with a method wherein said DLC film is formed

using plasma CVD of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Regarding claim 12, Umemoto et al. discloses index can be formed by increasing refractive index through application of an energy beam to said film (paragraph 0007). Umemoto et al. discloses the claimed invention except for a DLC film. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Regarding claim 13, Umemoto et al. discloses wherein said energy beam application can include ultraviolet radiation, X-ray radiation, synchrotron radiation, ion beam radiation, and electron beam radiation (paragraph 0017, line 7).

Regarding claim 14, Umemoto et al. discloses wherein a plurality of microlenses arranged in an array on a single film is formed simultaneously by applying an energy beam (paragraph 0007). Umemoto et al. discloses the claimed invention except for a DLC film. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference).

Claims **6-9** are rejected under 35 U.S.C. 103(a) as being unpatentable over Umemoto et al. (JP 06-075105) in view of Zhou et al. (USPG Pub No. 2005/0036738) as applied to claim 1 above, and further in view of Johnson et al. (USP No. 5,442,482).

Regarding claim 6, Umemoto et al. discloses said film includes a plurality of concentric band-shaped ring regions (see figures 1, 8); Umemoto et al. discloses the claimed invention except for DLC film, refractive indices of said band-shaped regions are graded relative to each other so that said band-shaped ring regions act as a diffraction grating, and widths of said band-shaped ring regions decrease as a distance from a center of said concentric circles increases. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference). In addition, in the same field of endeavor, Johnson et al. discloses refractive indices of said band-shaped regions are graded relative to each other so that said band-shaped ring regions act as a diffraction grating, and widths of said band-shaped ring regions decrease as a distance from a center of said concentric circles increases (see figure 8, col. 13, lines 18-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. in view of Zhou et al. with refractive indices of said band-shaped regions are graded relative to each other so that said band-shaped ring regions act as a diffraction grating, and widths of said band-shaped ring regions decrease as a

distance from a center of said concentric circles increases of Johnson et al. for the purpose of providing an improved microlens screen (col. 3, line 44 of Johnson et al. reference).

Regarding claim 7, Umemoto et al. discloses inner regions have higher refractive indices than outer regions (paragraph 0025); and corresponding regions in different zones have identical refractive indices (see figures 7-9). Umemoto et al. discloses the claimed invention except for DLC film includes m concentric ring zones, each of said ring zones containing n band-shaped ring regions. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference). In addition, in the same field of endeavor, Johnson et al. discloses film includes m concentric ring zones, each of said ring zones containing n band-shaped ring regions (see figure 8, col. 13, lines 20-26). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. in view of Zhou et al. with film includes m concentric ring zones, each of said ring zones containing n band-shaped ring regions of Johnson et al. for the purpose of providing an improved microlens screen (col. 3, line 44 of Johnson et al. reference).

Regarding claim 8, Umemoto et al. discloses the claimed invention except for said DLC film includes a plurality of parallel band-shaped regions; refractive indices of

said band-shaped regions are graded relative to each other so that said band-shaped regions act as a diffraction grating; and a width of said band-shaped region decreases as a distance from a predetermined band- shaped region increases. In the same field of endeavor, Zhou et al. discloses DLC film includes a plurality of parallel band-shaped regions (see figure 8, paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film includes a plurality of parallel band-shaped regions of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference). In addition, in the same field of endeavor, Johnson et al. discloses refractive indices of said band-shaped regions are graded relative to each other so that said band-shaped regions act as a diffraction grating, and a width of said band-shaped region decrease as a distance from a predetermined band-shaped region increases (see figure 8, col. 13, lines 18-30). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. in view of Zhou et al. with refractive indices of said band-shaped regions are graded relative to each other so that said band-shaped regions act as a diffraction grating, and a width of said band-shaped region decrease as a distance from a predetermined band-shaped region increases of Johnson et al. for the purpose of providing an improved microlens screen (col. 3, line 44 of Johnson et al. reference).

Regarding claim 9, Umemoto et al. discloses regions closer to said predetermined region have higher refractive indices than regions that are further away

(paragraph 0025); and corresponding regions in different zones have identical refractive indices (see figures 7-9). Umemoto et al. discloses the claimed invention except for DLC film includes m concentric band zones, each of said band zones containing n band-shaped regions. In the same field of endeavor, Zhou et al. discloses DLC film (paragraph 0057, line 17). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. with DLC film of Zhou et al. for the purpose of providing the proper material for the desired application (paragraph 0057, lines 20-23 of Zhou et al. reference). In addition, in the same field of endeavor, Johnson et al. discloses film includes m concentric band zones, each of said band zones containing n band-shaped regions (see figure 8, col. 13, lines 20-26). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the microlens of Umemoto et al. in view of Zhou et al. with film includes m concentric band zones, each of said band zones containing n band-shaped regions of Johnson et al. for the purpose of providing an improved microlens screen (col. 3, line 44 of Johnson et al. reference).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MAHIDERE S. SAHLE whose telephone number is (571)270-3329. The examiner can normally be reached on Monday thru Thursday 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571 272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MSS

/Ricky L. Mack/
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